

One Health Work Group Preliminary Background References – March 2017

During the first work group call, members brainstormed a couple of potential areas to focus on for their deliverable(s). This document presents background information on two topics, One Health core competencies and the business case for One Health.

Topic I: One Health Core Competencies

Background: The transdisciplinary nature of the One Health approach requires that One Health professionals have adequate knowledge, skills, behaviors, and attitudes that go beyond the discipline-specific lessons gained through traditional training programs. Identifying a set of One Health core competencies is critical to prepare professionals to tackle emerging health threats through cross sectoral collaboration and communication. Education and training programs that incorporate these core competencies will create a workforce better able to prevent, detect, and respond to infectious disease threats efficiently and effectively.

The work group could explore this topic by 1) evaluating existing core competencies related to One Health, or 2) following up on existing commentaries and recommendations in this area.

1. Evaluate core competencies related to One Health

The work group could evaluate existing core competencies that have been identified to contribute to One Health efforts. The work group could consider questions such as the following: To what extent are the correct skills and competencies being targeted? To what extent are core competencies appropriately integrated into curricula and teaching methodologies (lectures, small group discussions, laboratory instruction, field exercises, simulations, online learning, etc.) for public health/animal health/environmental health students? What are the gaps? To what extent have these core competencies led to policy changes?

The different groups listed below have developed One Health core competency domains (each of the specific core competency domains developed by these groups can be reviewed [here](#)):

- A. *Rome synthesis meeting*: Meeting participants came up with overarching One Health core competency domains based on three initiatives that individually developed One Health core competencies (Bellagio workgroup, Stone Mountain Meeting Training workgroup, USAID/RESPOND)
- B. *South East Asia One Health University Network (SEAOHUN)*: a network of fourteen faculties and schools of medicine, nursing, public health, and veterinary medicine from ten Southeast Asia universities
- C. *One Health Central & Eastern Africa (OHCEA)*: a network of twenty-one public health and veterinary higher education institutions that are located in eight countries in the Eastern and Central Africa region

The groups below have developed core competencies to strengthen the public health and veterinary workforce:

- D. *Association of Schools of Public Health (ASPH)* – [MPH model](#) and [Public Health Preparedness and Response model](#)
- E. *Council on Linkages Between Academia and Public Health Practice* – [Public Health Professionals](#)
- F. *North American Veterinary Medical Education Consortium (NAVMEC)* – [Roadmap for Veterinary Medical Education in the 21st Century](#)

2. Follow up on commentaries and recommendations related to core competencies

The work group could follow up on existing commentaries or build on recommendations related to core competencies that have been developed by others.

Subtopics to consider:

- Comment on measuring the quality and magnitude of impact as well as policy implications of core competencies and curriculum taught to One Health workforce
- Discuss evaluation techniques that measure how knowledge/skills/behaviors gained from curricula are applied in the short and long term
- Comment on the effectiveness of the university network driven model (like SEAOHUN) in preparing a strong One Health workforce and collaborating with the government and other partners
- Follow up on findings on current research and training efforts in [South Asia](#), [Australia/New Zealand](#), [China](#), [sub-Saharan Africa](#), [Western Europe](#), or [North America](#).

Relevant Literature

“One Health Core Competency Domains”

(Frankson, Hueston, Christian, Olson, Lee, Valeri, Hyatt, Anelli, Rubin, 2016)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5020065/>

A workshop was convened to synthesize the various strands of work on One Health competencies. Despite having different mandates, participants, and approaches, all of these initiatives identified similar core competency domains: management; communication and informatics; values and ethics; leadership; teams and collaboration; roles and responsibilities; and systems thinking.

➤ Related slides: [One Health Core Competencies](#)

“One Health in food safety and security education: A curricular framework”

(Angelos, Arens, Johnson, Johnson, Osburn, 2016)

<http://www.sciencedirect.com/science/article/pii/S014795711500096X>

To help address the need for an educated workforce working in the field of food-related problems, the authors developed a curricular framework to assist those tasked with designing education and training that incorporate One Health concepts for future food systems workers.

“One Health in the context of medical and veterinary education”

(McConnell, 2014)

<http://www.oie.int/doc/ged/D14096.PDF>

This paper discusses how best to develop educational platforms that can foster a wider appreciation of the importance of the One Health concept in medical and veterinary education. The authors argue that the objective in the medical and veterinary curriculum should be to ensure that all opportunities are taken throughout preclinical and clinical teaching to incorporate the lessons that have been learned from the success stories in One Health.

“Health professionals for a new century: transforming education to strengthen health systems in an interdependent world”

(Frenk, Chen, Bhutta, Cohen, Crips, Evans, Fineberg, Garcia, Ke, Kelley, et al., 2010)

[http://www.thelancet.com/article/S0140-6736\(10\)61854-5/fulltext](http://www.thelancet.com/article/S0140-6736(10)61854-5/fulltext)

The Commission develops a shared vision and a common strategy for postsecondary education in medicine, nursing, and public health that reaches beyond the confines of national borders and the silos of individual professions. The Commission’s framework considers the connections between education and health systems and is centered on people as co-producers and as drivers of needs and demands in both systems.

USAID’s Emerging Pandemic Threats Program - One Health Workforce (implementation support from University of Minnesota, Tufts)

- Slides about overall workforce program
<http://www.aavmc.org/data/files/annualconference/2014/ppt/nutter.pdf>

Background: Despite recognition of the importance of the One Health approach, the benefits of it have not been systematically elucidated. Clarity on the benefits of One Health would persuade decision makers to allocate and prioritize resources to invest in the approach. The economic benefits of One Health have been described through analyses of cost savings and effectiveness, while more indirect social and environmental benefits have been referenced but are not easily quantifiable. Limited data exists on specific areas where an integrated One Health approach is an investment (e.g. investing in control in animal health, which translates to human health cost savings and benefits for zoonotic diseases), but are crucial to arguments for greater One Health adoption.

The work group could explore this topic through 1) case studies, or 2) following up on existing commentaries and recommendations in this area.

1. Case Studies

The work group could create a value proposition of One Health through case studies, examining the national vs. regional vs. international One Health capacities and identifying where the value is added in each and where the gaps need to be filled.

The case studies below are examples that have explored operationalizing One Health programs in various settings and could help build further institutional support for the One Health approach.

- *National:* Canada is considered a unique example of a country that has fully implemented the One Health approach, when few countries have done so, through better integration of animal and human health sectors. The Canadian Science Centre for Human and Animal Health facility is the first joint laboratory in the world, with shared data systems, which a [World Bank report](#) has estimated to translate to US\$14.5 million a year in cost savings as well as efficiency gains.
- *Regional:* [A landscape analysis](#) of One Health activities in the South Asian region showed a range of country capacities in their integration of One Health programs, with Bangladesh as a leader in having government support for their research programs, a 'OH Bangladesh' professional network across sectors, as well as the national development of a Strategic Framework for One Health Approach to Infectious Diseases. Under the tri-partite mechanism of the WHO, the FAO, and OIE, regional programs focus on facilitating cooperation through meetings. A number of programs led by USAID's PREDICT and the US CDC Epidemiology Training Programs are focused on building surveillance and workforce capacity in their operating countries.

2. Recommend or follow up on commentaries related to the business case

The work group could build on existing commentaries or recommendations that discuss the business case for One Health.

Subtopics to consider:

- a. Follow up on the findings from World Bank/EcoHealth Alliance/USAID meeting on One Health Economics in Jan-Feb 2017
- b. Comment on the potential metrics and assessments recommended to evaluate One Health interventions (e.g., Baum et al., 2017)
- c. Build on work of Network for Evaluation of One Health
- d. Comment on the World Bank's report on Economics of One Health that lays out data limitations and suggestions for future improvement, and then develop a roadmap for efforts to standardize data collection across sectors in order to strengthen the validity of One Health evaluations

Relevant Literature

“Evaluating One Health: Are we demonstrating effectiveness?”

(Baum, Machalaba, Daszak, Salerno, Karesh, 2017)

<http://www.sciencedirect.com/science/article/pii/S2352771416300143>

The authors conducted a review of One Health literature to determine the current status of One Health frameworks and case studies reporting One Health metrics. They found that the absence of a standardized framework to capture metrics across disciplines, even in a generic format, may hinder the more widespread adoption of One Health among stakeholders. The authors review possible outcome metrics suitable for the future evaluation of One Health, noting the relevance of cost outcomes to the three main disciplines associated with One Health.

“A review of the metrics for One Health benefits”

(Hasler, Cornelsen, Bennani, Rushton, 2015)

<http://www.oie.int/doc/ged/D14080.PDF>

This paper finds that most published work on One Health describes how this concept is valuable without trying to estimate the size of benefit or type of value. The authors argue that a framework for measuring the advantages of a One Health approach is needed and recommends ways of developing one.

“The Network for Evaluation of One Health: evidence-based added value of One Health”

(Haxton, Sinigoj, Riviere-Cinamond, 2015)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4590410/pdf/IEE-5-28164.pdf>

The Network for Evaluation of One Health (NEOH), which is funded by the European Cooperation in Science and Technology (COST), is an open network that brings together various stakeholders to address the questions ‘does One Health work?’ and ‘is One Health worthwhile?’. The overall objective of NEOH is to enable appropriate evaluations of One Health interventions through the elaboration of a methodological framework and guide that would motivate and encourage enablers and value chain actors to apply methods at the relevant scale. This will allow the comparison of results between different interventions on zoonotic diseases using the same methodological approach, and will point out the most cost-effective alternatives, helping the decision making process and public health policy formulation.

“The Business Case for One Health”

(Grace, 2014)

<http://www.ojvr.org/index.php/ojvr/article/view/725/993>

This article identifies five potential areas where One Health can add value and reduce costs. These are: (1) sharing health resources between the medical and veterinary sectors; (2) controlling zoonoses in animal reservoirs; (3) early detection and response to emerging diseases; (4) prevention of pandemics; and (5) generating insights and adding value to health research and development. The authors suggest that one dollar invested in One Health can generate five dollars worth of benefits and a global investment of US\$25 billion over 10 years could generate benefits worth at least US\$125 billion.

“Toward Proof of Concept of a One Health Approach to Disease Prediction and Control”

(Rabinowitz, Kock, Kachani, Kunkel, Thomas, et al., 2013)

https://wwwnc.cdc.gov/eid/article/19/12/13-0265_article

In 2010, a Stone Mountain Working Group assembled and evaluated the evidence regarding proof of concept of the One Health approach to disease prediction and control. Aspects examined included the feasibility of integrating human, animal, and environmental health and whether such integration could improve disease prediction and control efforts. They found evidence to support each of these concepts but also identified the need for greater incorporation of environmental and ecosystem factors into disease assessments and interventions. The findings of the Working Group argue for larger controlled studies to evaluate the comparative effectiveness of the One Health approach.

“Metrics for One Health benefits: Key inputs to create an economic evidence base workshop”

(2013)

<http://www.lcirah.ac.uk/sites/default/files/Metrics%20for%20One%20Health%20benefits%20workshop%20report%20final.pdf>

Participants of this workshop recommend a set of metrics and associated methods that are most effective and practical for the standardized assessment of selected One Health benefits.

“Assessing Global Adoption of One Health Approaches”

(Hueston, Appert, Denny, King, Umber, Valeri, 2013)

<http://link.springer.com/article/10.1007%2Fs10393-013-0851-5>

The authors use a transformational change model as an evaluation tool and part of an overall assessment of the global adoption of One Health approaches. The assessment establishes a point of reference for measuring progress toward One Health approaches being the new operating normal.

“People, Pathogens and our Planet, Volume 2: The Economics of One Health”

(World Bank, 2012)

<http://documents.worldbank.org/curated/en/612341468147856529/pdf/691450ESW0whit0D0ESW120PPPvol120web.pdf>

This report analyzes and assesses the benefits and the costs of control of contagious diseases, and presents numerous examples of efficient and effective control of zoonotic diseases that is attributable to One Health. The authors calculate that investment in One Health systems of between US\$1.9-3.4 billion per year is required. This report concludes that One Health systems for prevention and control of zoonotic diseases offers extraordinarily high expected benefits, with rates of return far above those of other public and private investments and provides recommendations on next steps.